

FOG INERTIAL NAVIGATION SYSTEM

FEATURES

- Multimode Kalman Filter for Sensor Fusion
- High-End Tactical Class FOG, 0.1 °/hr Bias Instability
- Accurate Attitude and Heading data
- Superior GPS denied performance
- Multi-frequency (L1/L2/L5) RTK GNSS Receiver with anti-jamming capabilities
- Isolated Interfaces and Power Supply
- Rugged Design, MIL-STD-810F/G, MIL-STD-461E/F and JSS55555 Compliant

ALD-NS3500S



Note: This is a representational image.

APPLICATIONS

- Unmanned Aerial Vehicle
- Airborne, Land Navigation
- Armored Vehicle Navigation
- Antenna Stabilization
- Autonomous Vehicle Navigation
- Remotely Operated Vehicles (ROVs)
- Unmanned Underwater Vehicles (UUVs)

DESCRIPTION

Aldebaran ALD-NS3500S is a Rugged GNSS aided high performance Fiber Optic Gyro (FOG) based Inertial Navigation System. The device incorporates High end tactical class three axis accelerometers, three axis fiber-optic gyroscopes and an integrated multi-constellation GNSS receiver. The sensors are characterized and calibrated in Aeron's state of art facility. Aeron's proprietary parameter estimation engine delivers fast alignment and tactical class navigation performance in a matter of minutes.

The ALD-NS3500S model has a multi-frequency (L1/L2/L5), multi-constellation GNSS receiver with multi tracked channels and best in class signal sensitivity. The built-in GNSS receiver is resistant to radio frequency interference and protects the device performance from intentional jamming and spoofing.

The Aldebaran series INS offers superior pure-inertial performance in short term GNSS outages. External air data/velocity and position aiding can also be provided to the system. ALD-NS3500S is suitable for positioning and pointing in airborne, land & naval applications.

TECHNICAL SPECIFICATIONS

Parameter Value	Parameter Value
	Aldebaran
	NS3500S
Acceleration	
Range	±10 g
Bias Instability	15 µg
Bias Repeatability	1.2 mg
Raw Bandwidth	>1 kHz
Angular Rate	
Range	±450 °/s
Bias Instability	0.1 °/hr
Raw Bandwidth	>1 kHz
ARW	<0.012 °/sqrt(hr)
Position/ Velocity Accuracy	
Hybrid Position ^{1,2,3}	<0.8 cm with RTK 1.5 m with GNSS 1 m with SBAS 0.5% of DT with external Odometer ⁴
Vertical Position ^{1,2,3}	<2 cm with RTK 2.5 m (1σ) with GNSS 1.5 m (1σ) with SBAS 2 m (1σ) relative with Barometer
Velocity	0.05 m/s RMS with GNSS
Attitude	
Roll Range	±180°
Pitch Range	±90°
Roll, Pitch Accuracy	±0.05° (2σ) Static ±0.1° (1σ) Dynamic
Roll, Pitch Resolution	0.01°
Heading	
Heading Range	±180°
Heading Accuracy	0.5° RMS with magnetometer 0.3° RMS with GNSS in dynamic conditions
Resolution	0.01°
GPS / GNSS	
Type	Multi channel, L1/ L2/ L5 Code / Carrier phase GPS, GLONASS, QZSS, BEIDOU and IRNSS/NavIC
Diff. Correction Type ⁵	RTCMv2, RTCMv3, CMRv2 (for RTK mode)
TTF ⁶ Cold Start	45 s
Reacquisition Time	1 s
Connector	TNC
Barometer	
Range	300-1100 hPa
Accuracy	±1 hPa

1 - Open sky conditions

2 - RMS levels

3 - Baseline <40 km

4 - 0.5-2 %, subject to Odometer accuracy

5 - RTK mode of operation requires differential corrections from RTK base station

6 - Time to First Fix

TECHNICAL SPECIFICATIONS

Parameter Value	Parameter Value
	Aldebaran
	NS3500S
Electrical	
Input Voltage	14 V to 32 V DC
Power Consumption	<12 W
Update Rate	100 Hz Navigation 200 Hz Raw measurement
Interface	Isolated RS232 x 2, RS422 x 1, 1 PPS, CAN
Data Format	NMEA / Binary
External Inputs	<ul style="list-style-type: none"> - External GNSS feed - External Magnetometer feed - External Airspeed feed - External Position and Speed input - Odometer input
Physical	
Dimensions	<200 mm x 160 mm x 130 mm*
Weight	<2 kg
Environment	
Operating Temperature	-40 °C to +71 °C
Storage Temperature	-55 °C to +85 °C
Humidity	10 % to 90 % RH (non - condensing)
IP Protection	IP65
Vibration	MIL-STD-810G
Hardware Design Compliant	
Power Supply	MIL-STD-704D
EMI/EMC	MIL-STD-461E
Environmental Tests	MIL-STD-810G

* - Dimensions are subject to change

ORDERING INFORMATION

ALD - NS3500S (Product Code: 25022)